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	Title	
	2014 Spring Northern Bobwhite Whistle Count	

ABSTRACT: Spring whistle counts have been conducted annually throughout Indiana since 1947 (except 1959-1975) to assess changes in bobwhite abundance. In 2014, 471 whistling bobwhites were counted along 79 routes. Data were only included in the analysis if routes were surveyed in both 2013 and 2014, and at least 1 quail was recorded in those years. Considering only these routes ($n = 70$), the statewide average number of bobwhites heard per survey route in 2014 ($\bar{x} = 6.7 \pm 0.3$) was significantly lower ($P = 0.0001$) than the number heard in 2013 ($\bar{x} = 10.2 \pm 0.4$; Table 1). When we examined hunting zones (Figure 1) in Indiana, we observed significant declines in both zones (South: -29.7%; North: -52.2%).

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The northern bobwhite is widely distributed throughout eastern North America and Mexico and is one of the most important game birds in the southern and mid-western United States. In Indiana, there are approximately 11,000 quail hunters that annually harvest nearly 20,000 birds. To monitor changes in the bird's annual abundance, the Indiana Division of Fish and Wildlife conducts road-side counts of whistling bobwhites each spring. Survey results are used to formulate management priorities, set harvest regulations, and evaluate habitat improvement programs.

METHODS

The Indiana Division of Fish and Wildlife conducts road-side counts of whistling bobwhites each spring to monitor changes in population abundance. These counts have been conducted annually since 1947 lapsing in the years between 1958 and 1976 due to personnel issues. Currently, 91 routes are established across 88 counties and are surveyed during the month of June. Observers record the number of quail heard whistling during 3 minute periods at 15 different stops along each route. The routes are 15 miles in length and listening stops are spaced at approximately 1-mile intervals along each route. Counts start at sunrise and are not conducted during precipitation events or when winds exceeded 12 mph. Only data from routes surveyed in both years

where at least 1 quail was recorded were used to assess annual changes in the bobwhite breeding population. These data were used to draw statistical comparisons ($\bar{x} \pm SD$) between indices of male abundance from 2013 and 2014 through a paired t-test with significance at the 90% confidence level, both statewide and within each hunting zone (Figure 1).

RESULTS

In 2014, a total of 471 quail were heard on 79 established routes in 76 counties between 5 June and 29 June. During 2013 and 2014, only 70 routes in 67 counties were conducted in both years and recorded at least 1 quail, and data from only these routes were used to draw statistical comparisons between indices of bobwhite abundance. Statewide, the average number of bobwhites heard per survey route in 2014 ($\bar{x} = 6.7 \pm 0.3$) was significantly lower ($P = 0.0001$) than the number heard in 2013 ($\bar{x} = 10.2 \pm 0.4$; Table 1). When we examined hunting zones (Figure 1) in Indiana, we observed significant declines in both zones (Table 1). Between 2013 and 2014, the south hunting zone, the area south of Interstate 74, saw a 29.7% decline, while the north hunting zone, the area north of Interstate 74 experienced a 52.2% decline.



DISCUSSION

The cold, harsh winter of 2013-2014 likely had a significant effect on the quail population across the state, but was more dramatic in the northern portions of the state where we have continued to lose early successional quail habitat and populations are small and isolated. Good summer nesting conditions may help the population rebound a bit, but habitat loss, particularly the loss of quality winter cover, will continue to keep the population down and will enhance the negative effects of predation and weather events.

Currently, little more than 265,000 acres of farmland are idle across the state through the Conservation Reserve Program (CRP), and this land is being reverted to farmland as contracts expire and incentives cannot compete with high commodity prices. Indiana has had more than a 91% loss of potential game bird habitat when compared to the late 1960s and early 1970s.

Long-term trends show the northern

bobwhite population in Indiana has been on a steady decline for over 20 years (Figure 2).

Indiana landowners interested in creating bobwhite habitat can take advantage of a number of federal and state habitat conservation programs. For more information about federal programs, contact your local USDA service center or go to: www.in.nrcs.usda.gov. The Indiana Division of Fish and Wildlife has programs that can provide landowners with support and funds to establish and/or maintain game bird habitat. These programs include the Wildlife Habitat Cost-Share Program, the Game Bird Habitat Development Program, and in designated pheasant priority areas, and the Quail Habitat Incentive Program. For additional information about these IDFW programs, contact your **local district biologist** or visit: www.in.gov/dnr/fishwild/2352.htm

Table 1. Male northern bobwhites heard/route ($\bar{x} \pm SD$) along 71 paired survey routes statewide and in Indiana's hunting zones.

Hunting Zone	<i>n</i> ^a	2013	2014	% Change	<i>P</i> ^b
Statewide	70	10.2 \pm 0.4	6.7 \pm 0.3	-34.7%	0.000 ***
North	32	4.9 \pm 0.2	2.3 \pm 0.1	-52.2%	0.000 ***
South	38	14.7 \pm 0.6	10.3 \pm 0.4	-29.7%	0.001 ***

^aIncludes only non-zero routes surveyed in both 2013 and 2014.

^b*=P<0.10, **=P<0.05, ***=P<0.01. Significance was defined as P<0.10 in the 2-year comparison due to the low power of the test.

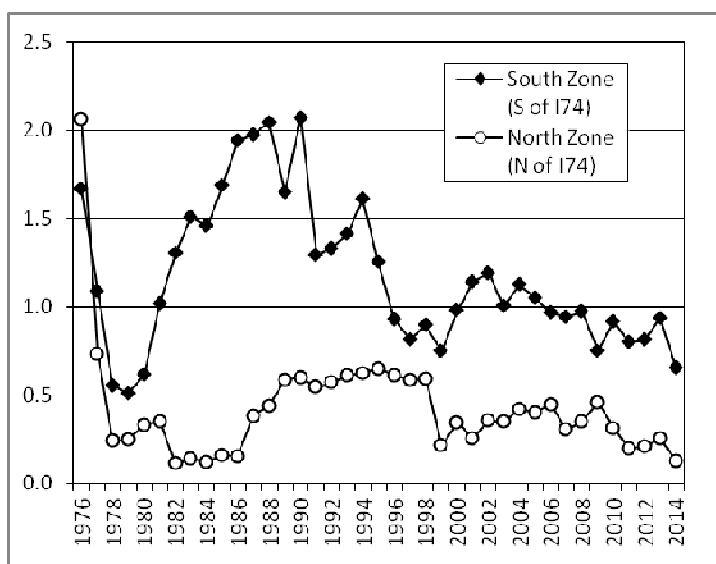


Figure 2. Mean number of northern bobwhite heard at each survey stop within Indiana's two hunting zones (1976-2013). Unpaired zero routes were included.

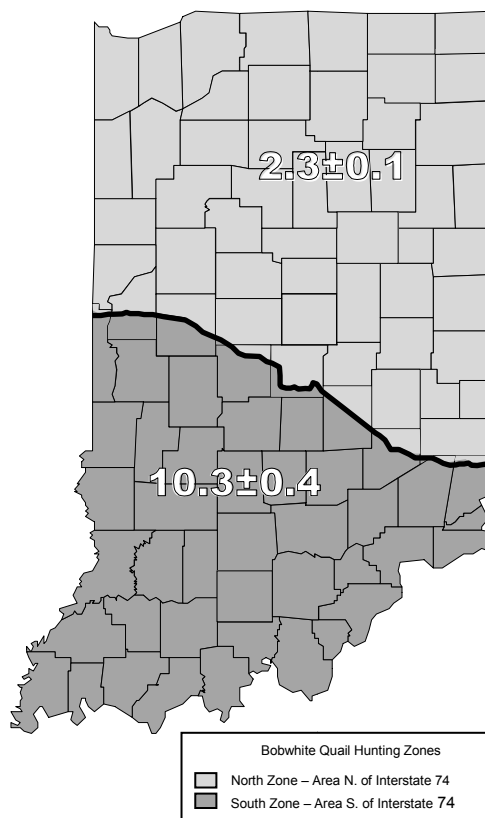


Figure 1. Map illustrating the 2 hunting zones within the state of Indiana, and the average number of northern bobwhites heard per route within those zones.